

CLAIMS

1. A high-density detergent composition comprising 10 to 60% by weight of a surfactant composition having a weight ratio of an anionic surfactant to a nonionic surfactant of 4:10 or more and 10:0 or less, wherein the high-density detergent composition has a bulk density of from 600 to 1200 g/L, and has a total summation of a product of a mass base frequency W_i and a dissolving rate V_i of each group of classified granules obtained by classifying detergent granules by using a classifier, which satisfies the following formula (A):

$$\Sigma(W_i \bullet V_i) \geq 95(\%) \quad (A)$$

and wherein a mass base frequency of the classified granules having a size of less than 125 μm is 0.1 or less, wherein the classifier comprises sieves each having a sieve-opening 2000 μm , 1410 μm , 1000 μm , 710 μm , 500 μm , 355 μm , 250 μm , 180 μm , and 125 μm , and a receiver, and the dissolving rate V_i is determined under the following measurement conditions:

supplying 1.000 g \pm 0.010 g of a sample to 1.00 L \pm 0.03 L of water at 5°C \pm 0.5°C having a water hardness of 4°DH, stirring in a 1 L beaker of which inner diameter is 105 mm, with a cylindrical stirring rod of which length is 35 mm and diameter is 8 mm, at a rotational speed of 800 rpm for 120 seconds, and thereafter filtering insoluble remnants by a standard sieve having a sieve-opening of 300 μm as defined according to JIS Z 8801, wherein the dissolving rate V_i of the classified granules is calculated by the following formula (a), i being each group of the classified granules:

$$V_i = (1 - T_i/S_i) \times 100(\%) \quad (a)$$

wherein S_i is a weight (g) of each group of the classified granules supplied; and T_i is a dry weight (g) of the insoluble remnants of each group of the classified granules remaining on the sieve after filtration.

- 5 2. A high-density detergent composition comprising 10 to 60% by weight of a surfactant composition having a weight ratio of an anionic surfactant to a nonionic surfactant of 0:10 or more and less than 4:10, the detergent composition having a bulk density of from 600 to 1200 g/L, wherein the high-density detergent composition has a total summation of a product of a mass base frequency W_i of each group of classified granules obtained by classifying detergent granules by using the classifier as defined in claim 1 and a dissolving rate V_i of each group of the classified granules determined under the measurement conditions as defined in claim 1, which satisfies the following formula (B):

10 15
$$\Sigma(W_i \bullet V_i) \geq 97(\%) \quad (B)$$

and wherein a mass base frequency of the classified granules having a size of less than 125 μm is 0.08 or less.

- 20 3. A process for preparing the high-density detergent composition of claim 1, comprising subjecting unclassified detergent granules comprising 10 to 60% by weight of a surfactant composition to classification operation; and adjusting a particle size of each group of the resulting classified granules, such that the formula (A) as defined in claim 1 is satisfied, and that a mass base frequency of the classified granules having a size of less than 125 μm is 0.1 or less.

4. A process for preparing the high-density detergent composition of claim 2, comprising subjecting unclassified detergent granules comprising 10 to 60% by weight of a surfactant composition to classification operation; and adjusting a particle size of each group of the resulting classified granules, such that the formula (B) as defined in claim 2 is satisfied, and a mass base frequency of the classified granules having a size of less than 125 μm is 0.08 or less.

2023-04-26 10:23:50